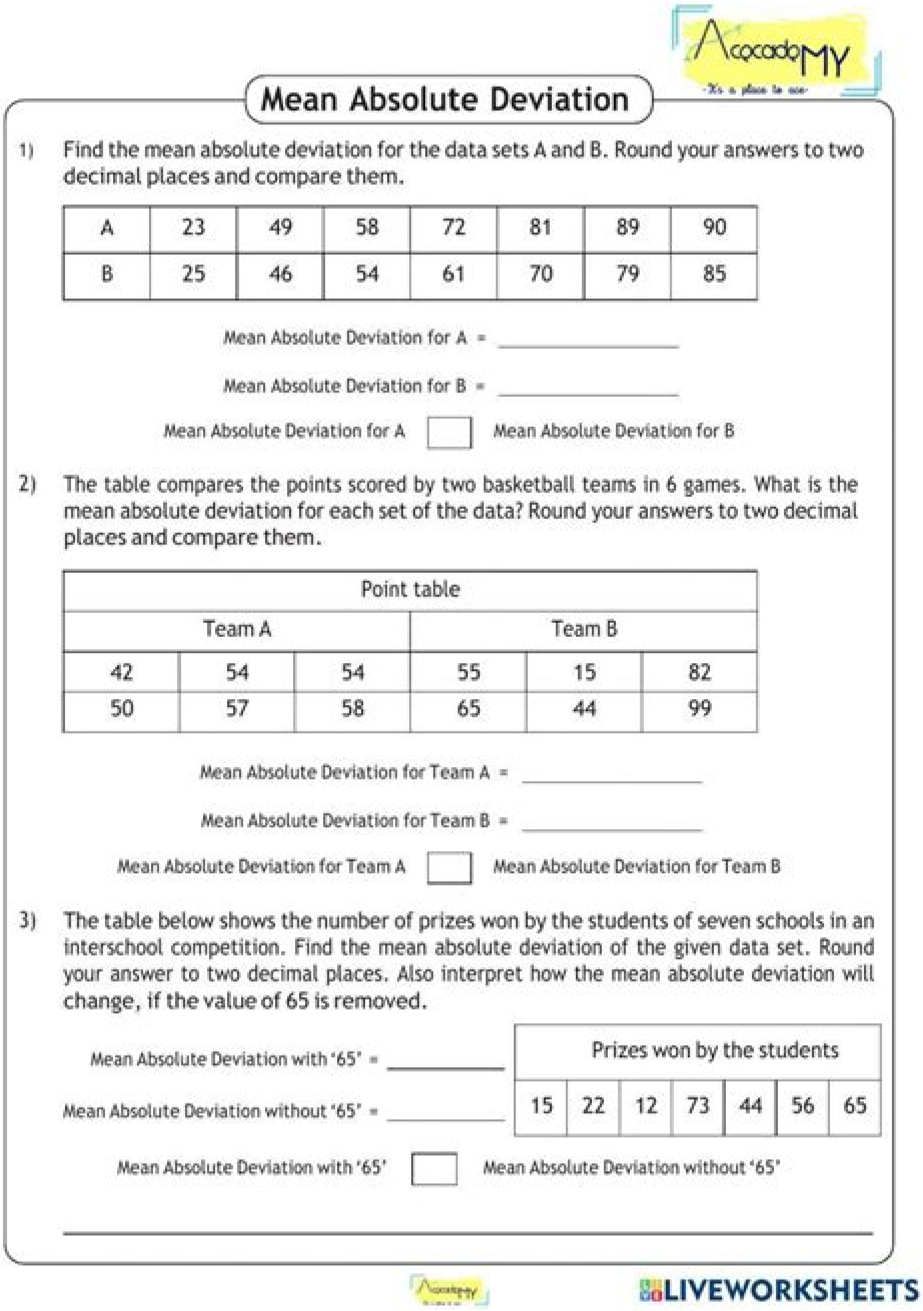
Mean Absolute Deviation Worksheet With Answers



Mean Absolute Deviation

1) Find the mean absolute deviation for the data sets A and B. Round your answers to two decimal places and compare them.

A	23	49	58	72	81	89	90
B	25	46	54	61	70	79	85

Mean Absolute Deviation for A = ______________

Mean Absolute Deviation for B = ______________

Mean Absolute Deviation for A ☐ Mean Absolute Deviation for B

2) The table compares the points scored by two basketball teams in 6 games. What is the mean absolute deviation for each set of the data? Round your answers to two decimal places and compare them.

Point table					
Team A			Team B		
42	54	54	55	15	82
50	57	58	65	44	99

Mean Absolute Deviation for Team A = ______________

Mean Absolute Deviation for Team B = ______________

Mean Absolute Deviation for Team A ☐ Mean Absolute Deviation for Team B

3) The table below shows the number of prizes won by the students of seven schools in an interschool competition. Find the mean absolute deviation of the given data set. Round your answer to two decimal places. Also interpret how the mean absolute deviation will change, if the value of 65 is removed.

Prizes won by the students						
15	22	12	73	44	56	65

Mean Absolute Deviation with '65' = ______________

Mean Absolute Deviation without '65' = ______________

Mean Absolute Deviation with '65' ☐ Mean Absolute Deviation without '65'

____

LIVEWORKSHEETS

Mean Absolute Deviation Worksheet with Answers is a crucial tool for students and educators alike, as it provides a structured way to understand and practice the concept of mean absolute deviation (MAD). This statistical measure helps in understanding the dispersion of a data set, offering insights into how much individual data points deviate from the mean. In this article, we will explore the concept of mean absolute deviation, how to create a worksheet for practice, and provide a sample worksheet along with answers.

Understanding Mean Absolute Deviation

Mean Absolute Deviation (MAD) is a measure of variability that indicates the average distance between each data point in a set and the mean of that set. It is particularly useful because it gives a clear picture of how spread out the values are in a data set, without being influenced by extreme values (outliers).

Formula for Mean Absolute Deviation

The formula for calculating the Mean Absolute Deviation is as follows:

1. Find the mean (average) of the dataset.
2. Subtract the mean from each data point and take the absolute value of each result.
3. Find the average of these absolute values.

Mathematically, it can be expressed as:

$$
MAD = \frac{1}{N} \sum_{i=1}^{N} |x_i - \mu|
$$

Where:
- N = number of data points
- x_i = each data point
- μ = mean of the data points

Steps to Calculate Mean Absolute Deviation

1. Calculate the Mean:
   - Add all the data points together.
   - Divide the sum by the total number of data points.

2. Find the Absolute Deviation:
   - Subtract the mean from each data point.
   - Take the absolute value of each of those results.

3. Calculate the Mean of the Absolute Deviations:
   - Add all the absolute deviations together.
   - Divide by the total number of data points.

Creating a Mean Absolute Deviation Worksheet

A mean absolute deviation worksheet typically consists of a set of problems that require students to calculate the MAD for given datasets. Here, we will outline how to create an effective worksheet.

Components of the Worksheet

1. Introduction Section:
- Brief explanation of what mean absolute deviation is and its relevance in statistics.

2. Sample Problems:
- A variety of datasets to calculate the MAD, including both small and larger sets for varying difficulty levels.

3. Answer Key:
- A section at the end of the worksheet that provides answers to the problems.

Sample Problems for the Worksheet

Here are some example problems that could be included in the worksheet:

Problem 1:
Calculate the Mean Absolute Deviation for the following dataset:
\[3, 7, 8, 12, 14 \]

Problem 2:
Find the Mean Absolute Deviation for this set of numbers:
\[5, 10, 15, 20, 25 \]

Problem 3:
Determine the Mean Absolute Deviation for the dataset below:
\[1, 4, 6, 8, 10 \]

Problem 4:
Using the following data, calculate the Mean Absolute Deviation:
\[2, 4, 6, 8, 10, 12, 14 \]

Problem 5:
For the following scores, find the Mean Absolute Deviation:
\[95, 85, 75, 90, 100 \]

Answers to the Sample Problems

To aid in the learning process, it is essential to provide clear answers and work through the calculations step by step. Below are the solutions to the sample problems provided.

Solution to Problem 1

Given dataset: \(3, 7, 8, 12, 14\)

1. Calculate the Mean:
\[
\text{Mean} = \frac{3 + 7 + 8 + 12 + 14}{5} = \frac{44}{5} = 8.8
\]

2. Find the Absolute Deviations:
- |3 - 8.8| = 5.8
- |7 - 8.8| = 1.8
- |8 - 8.8| = 0.8
- |12 - 8.8| = 3.2
- |14 - 8.8| = 5.2

3. Calculate the Mean Absolute Deviation:
\[
MAD = \frac{5.8 + 1.8 + 0.8 + 3.2 + 5.2}{5} = \frac{16.8}{5} = 3.36
\]

MAD = 3.36

Solution to Problem 2

Given dataset: \(5, 10, 15, 20, 25\)

1. Calculate the Mean:
\[
\text{Mean} = \frac{5 + 10 + 15 + 20 + 25}{5} = \frac{75}{5} = 15
\]

2. Find the Absolute Deviations:
- |5 - 15| = 10
- |10 - 15| = 5
- |15 - 15| = 0
- |20 - 15| = 5
- |25 - 15| = 10

3. Calculate the Mean Absolute Deviation:
\[
MAD = \frac{10 + 5 + 0 + 5 + 10}{5} = \frac{30}{5} = 6
\]

MAD = 6

Solution to Problem 3

Given dataset: \(1, 4, 6, 8, 10\)

1. Calculate the Mean:

\[
\text{Mean} = \frac{1 + 4 + 6 + 8 + 10}{5} = \frac{29}{5} = 5.8
\]

2. Find the Absolute Deviations:
- |1 - 5.8| = 4.8
- |4 - 5.8| = 1.8
- |6 - 5.8| = 0.2
- |8 - 5.8| = 2.2
- |10 - 5.8| = 4.2

3. Calculate the Mean Absolute Deviation:
\[
MAD = \frac{4.8 + 1.8 + 0.2 + 2.2 + 4.2}{5} = \frac{13.2}{5} = 2.64
\]

MAD = 2.64

Solution to Problem 4

Given dataset: \(2, 4, 6, 8, 10, 12, 14\)

1. Calculate the Mean:
\[
\text{Mean} = \frac{2 + 4 + 6 + 8 + 10 + 12 + 14}{7} = \frac{56}{7} = 8
\]

2. Find the Absolute Deviations:
- |2 - 8| = 6
- |4 - 8| = 4
- |6 - 8| = 2
- |8 - 8| = 0
- |10 - 8| = 2
- |12 - 8| = 4
- |14 - 8| = 6

3. Calculate the Mean Absolute Deviation:
\[
MAD = \frac{6 + 4 + 2 + 0 + 2 + 4 + 6}{7} = \frac{24}{7} \approx 3.43
\]

MAD ≈ 3.43

Solution to Problem 5

Given dataset: \(95, 85, 75, 90, 100\)

1. Calculate the Mean:
\[
\text{Mean} = \frac{95 + 85 + 75 + 90 + 100}{5} = \frac{445}{5} = 89
\]

2. Find the Absolute Deviations:
- |95 - 89| = 6
- |85 - 89| = 4
- |75 - 89| = 14
- |90 - 89| = 1
- |100 - 89| = 11

3. Calculate the Mean Absolute Deviation:
\[
MAD = \frac{6 + 4 + 14 + 1 + 11}{5} = \frac{36}{5} = 7.2
\]

MAD = 7.2

Conclusion

The Mean

Frequently Asked Questions

What is mean absolute deviation (MAD) and why is it important?

Mean absolute deviation (MAD) is a measure of the average distance between each data point in a set and the mean of that set. It is important because it provides insight into the variability and dispersion of the data, allowing for better decision-making and understanding of data trends.

How do you calculate the mean absolute deviation from a data set?

To calculate the mean absolute deviation, first find the mean of the data set. Then, subtract the mean from each data point to find the absolute deviations. Finally, average those absolute deviations by summing them and dividing by the number of data points.

Can you provide an example of a mean absolute deviation worksheet?

Sure! A mean absolute deviation worksheet might include a data set, such as {4, 8, 6, 5, 3}. The worksheet would prompt students to calculate the mean (5.2), find the absolute deviations (1.2, 2.8, 0.8, 0.2, 2.2), and then compute the MAD (1.84).

Are there any online resources for practicing mean absolute deviation worksheets?

Yes, there are numerous online resources such as educational websites, math practice platforms, and interactive tools that provide worksheets and exercises for practicing mean absolute deviation, often with instant feedback and solutions.

What common mistakes should students avoid when calculating mean absolute deviation?

Common mistakes include failing to take the absolute value of deviations, incorrectly calculating the mean, or misapplying the formula for averaging the deviations. It's important to double-check each step to ensure accuracy.

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